APPENDIX E

Guidelines for Preparing Capital Project Cost Estimates (Form C-100)

The Capital Project Cost Estimate Form is a tool to assist agencies and institutions in creating a project construction budget. It can also be an analysis tool to help agency/institution management, as well as executive and legislative decision-makers, understand the costs and other parameters associated with many aspects of the project. And, in a similar manner, it can measure capital construction performance at both the agency/institution level and in a statewide perspective. The Capital Project Cost Estimate Form is NOT an accounting tool; it does not create lines of cost codes and associated funds for payment of the various budgeted items.

Cost planning is different from cost estimating. Cost planning occurs before design begins and relies on historical or standard industry data to predict the project's probable cost. It answers the question "Within what range will the project budget fall after the project is fully designed?" On the other hand, cost estimating refines the probable project cost from drawings and specifications. The C-100 is a cost estimating activity that is created through more defined project information.

Agencies are required to prepare and submit **Form C-100** for:

- The preferred alternative on all major projects exceeding $5 million that have completed the predesign phase. If the project for which the request is being made has not undergone a Predesign Study in accordance with OFM's *Predesign Manual*, only section B1 of Form C-100 and the Project Statistics information, including the estimates of total project cost, should be completed and included with the request. If a Predesign Study has been completed, a copy of the study, including Form C-100, should be submitted with the agency's request for further project appropriations.
- All requests for single projects greater than $1 million are also required to include a completed C-100 form.
- Projects of lesser value may also include the C-100 form to support the request.

Form C-100 identifies the principal assumptions used for cost estimates. Every project is unique; consequently, the list of cost items on the C-100 Form is not inclusive. Cost items other than those listed on the C-100 can be included, if known, or subsequently identified as more information about the project becomes available.

Electronic Submittal Requirement

Electronic spreadsheet templates of the C-100 have been developed by OFM and will be used by all agencies/institutions. Electronic files of Form C-100 cost estimates will be developed by agencies/institutions and submitted to OFM for all projects over $1 million.

Sources of Cost Estimates

Cost estimates originate from the agency's technical staff, from the Division of Engineering and Architectural Services (E&AS) within the Department of General Administration, or from consultants. Cost information may be derived from agency or General Administration historical information from projects similar to that being considered or from unit-cost/square-foot-cost information from industry standard estimating guides (such as R.S. Means, Dodge, or other national standards). Quantity takeoff estimates may be based on specifically determined project components and design configurations (e.g., as shown in architectural drawings and specifications).

Cost estimates are refined as more project specific information becomes known from predesign or design activities. Refined cost estimates should include the following:

- **More Specific Determinations of Project Size, Complexity, and Quality**. As more detailed quantity takeoff estimation becomes available, cost estimates should be prepared using this technique as much as possible. Even if unit-cost figures must still be used, they should be broken down into the smallest reasonable cost categories. Ultimately, detailed construction cost estimates can be prepared from the final design documents.
- **Further Identification of the Attendant Costs of the Construction Program**. Evaluate the inclusion of items such as those in the Capital Project Cost Estimate. Denote and provide costs for items discovered that are not shown on the form. Many such issues do not become apparent until predesign and preliminary design activities are conducted.

Design and Consulting Services Costs

Basic design services costs are automatically calculated on the Capital Project Cost Estimate Form. These fees are computed from an OFM derived fee schedule multiplier on the maximum allowable construction cost for the project. The fee schedule considers the building type, complexity and estimated construction cost. Basic design services do not necessarily include all of the design disciplines or activities required for a particular project. Additional design services that are frequently required for many public works projects are listed on Form C-100.

Base Month Cost Adjustments

The cost adjustment factors provide escalation multipliers that are applied to the aggregate cost categories indicated on the cost estimate summary section of the Capital Project Cost Estimate. Escalation factors are determined by OFM and are automatically calculated on the various

elements of the cost estimate based on the inflation rate applied to the estimated time from the base month and the design or construction event.

Project Schedule Estimates

The Project Schedule by Phase/Activity chart below provides an historically based estimate of the duration of various activities of the design and construction, expressed as a function of project value. Other scheduling considerations also are identified. In addition, the overall schedule must account for the anticipated budget approval cycle, funding cycles, and other activity cycles particular to each agency. The planning cycle itself impacts the project development schedule.

The project scheduling process requires careful and detailed planning. Consider not only the desired start/finish dates, but also the intermediate milestones that are to be achieved. Evaluate the schedule requirements both for activities occurring before the milestones and those following. Creating even the most preliminary project schedule will involve at least two points in time: project start and project completion. Milestones may be predetermined by external constraints or established by choice, depending on the specific situation such as weather considerations.

Actual project durations depend on the adequacy of programming and planning, complexity of the design, use of concurrent activity, streamlining of the agency approval process, and the regulatory environment.

General Administration Supplemental Guidelines

In order to assist client agencies in the development of capital budgets, the Department of General Administration, Division of Engineering and Architectural Services has prepared a supplement of suggested guidelines to the Capital Project Cost Estimate Instructions. For a copy of this supplement contact E&AS at (360) 902-7272.

Project Schedule by Phase/Activity
Duration listed in Weeks

Project Phase/Activity	$20,000,000	$10,000,000	$5,000,000	$2,000,000	$700,000	$300,000
Predesign						
Project Assignment	1	1	1			
Scoping	4	4	3			
A/E Selection	4	4	4			
Perform Study	26	20	15			
Subtotal (Predesign)	**35**	**29**	**23**	**0**	**0**	**0**
Consultant Selection						
Project Assignment	1	1	1	1	1	1
Scope and Cost Verification	4	4	4	3	2	2
A/E Selection	6	4	4	4	2	2
A/E Fee Negotiation	2	2	2	2	1	1
A/E Agreement and NTP	1	1	1	1	1	1
Subtotal (Consultant Selection)	**14**	**12**	**12**	**11**	**7**	**7**
Design						
Schematic Design	17	15	13	10	5	3
Schematic Design Approval	2	2	2	2	1	1
Value Engineering Study *	3	2	2	2		
Design Development & Permits	17	13	11	10	5	5
Design Development Approval	2	2	2	2	1	1
Contract Documents						
Construction Documents	40	30	22	12	8	5
Constructability Review *	3	2	2	2		
Construction Documents Approval	4	4	3	2	2	2
Printing/to Bid	1	1	1	1	1	1
Subtotal (Design & Documents)	**89**	**71**	**58**	**43**	**23**	**18**
Construction						
Bid Period	4	4	4	3	2	2
Contract Award	2	2	2	1	1	1
Contract Notice to Proceed	1	1	1	1	1	1
Subtotal (Bid to Award)	**7**	**7**	**7**	**5**	**4**	**4**
Construction Time	90	72	60	44	33	20
Punchlist/Closeout	8	8	6	6	3	2
Commissioning *	8	8	6	6	3	2
Subtotal (Construction)	**106**	**88**	**72**	**56**	**39**	**24**
Approximate Project Time (Predesign not included)						
Total in Weeks	**216**	**178**	**149**	**115**	**73**	**53**
Total in Months	54	44.5	37.3	28.8	18.3	13.3
Total in Years	4.2	3.4	2.9	2.2	1.4	1

* Can overlap with other tasks

Capital Project Cost Estimate Information

1. General Items

- Information and cost data can only be entered in the white cells. Complete ONLY those blanks that apply to your project.
- If an item is estimated to have no cost or is not applicable to the project, insert a "0" in the blank.
- If text is needed to explain a cost, explain under "Notes" on the last page.
- Blanks are provided to add items not listed on the form.

2. Specific Items

- Under **Schedule and Escalation Factors**, enter the month and year for each phase. Cost adjustment factors for inflation are established by OFM. The Form C-100 will automatically calculate the escalation multipliers and escalated costs.
- In the **Statistics** section, "**Primary**" and "**Secondary**" reference the construction work. Primary work is a new facility; secondary work is remodeling of an existing facility. Because of other automatic calculations in the C-100, it is important to enter cost data in the correct and appropriate designations.
- GSF is the "**Gross Square Feet**" of building area contained in the project based on American Institute of Architects (AIA) Document D-101, *The Architectural Area and Volume of Buildings*.
- NSF is the "**Net Square Feet**" area of a structure that excludes stairwells, elevator shafts, corridors, toilet rooms, and wall thickness (sometimes called assignable square footage). The area should be measured from the predominant inside finish of permanent outer walls to the office side of corridors or permanent partitions, and to the centerline of walls separating adjacent assigned spaces. Where there are interior spaces surrounded by corridors, measurement shall be from the inside face of enclosing walls. Included should be space subdivisions for occupant use. Deductions should <u>not</u> be made for columns and structural projections necessary to the building or for partitions subdividing space.
- The ratio of NSF/GSF is referred to as the building's "**Efficiency**" and is automatically calculated by the C-100 Form. It only applies to buildings. The following chart provides guidelines for various types of buildings.
- The agency's program space is in terms of net (assignable) square feet (NSF) whereas the construction budget is in terms of gross square feet (GSF). The "**Estimated Cost per S.F.**" is automatically calculated by dividing the escalated maximum allowable construction cost by the GSF. The following chart provides guidelines for various types of buildings.

Efficiency Guidelines

Space Type	Percent Budget Range
General Government	
Office Buildings	75 – 80
Computer Facilities	60 – 65
Library Facilities	75 – 80
Auditorium	65 – 75
Cafeteria	65 – 70
Medical	50 – 60
Parking	90 – 95
Warehouse	90 – 95
Laboratory Facilities	55 – 60
Higher Education	
Teaching/Classrooms	65 – 70
Offices/Administration	75 – 80
Teaching/Laboratories	60 – 65
K-12 Facilities	80 – 85

Cost Guidelines

Space Type	$/sf Average-Max
General Government	
General Office Buildings	150 - 250
Correctional Housing	280 – 320
Parking Structures	100 - 150
Warehouse	100 - 150
Other	55 - 60
Higher Education	
Teaching/Classrooms	170 - 230
Offices/Administration	150 – 250
Teaching/Laboratories	200 – 290

- Selection of a "**Building Type**" establishes the Architect/Engineer (A/E) fee class and associated basic design fee schedule (see below). The C-100 Form automatically enters the fee class and fee percentage.
- The check box "**Is Project a remodel?**" adds two percent to the basic design service fees for to compensate for the added complexity associated with as-built facilities.
- The "**Contingency Rate**" is an allowance for uncertainties associated with estimating costs for design services and construction. Contingency is generally estimated at three to five percent. The C-100 Form will automatically apply the contingency rate to primary and secondary design service fees and MACC.
- The "**Management Reserve**" is an allowance for unanticipated changes beyond control of the A/E, construction contractor, or owner. The reserved amount is a function of risk and uncertainty and may be non-existent for some projects; the typical range is two to ten percent. Management reserve is automatically applied to the primary and secondary MACC in Form C-100.
- "**Tax Rate**" is the sales tax rate for the location of the project.
- Most major capital projects are subject to allowances for artwork under RCW 43.17.200 or RCW 28B.10.027 for higher education institutions. Check the box "**Art Requirements Applies**" to automatically calculate the artwork allowance for all applicable projects. Higher education institutions should check the box "**Higher Ed. Institution**" to automatically calculate the artwork allowance on renovation or remodel projects.
- Check the box "**Project Admin. by GA**" only if the project will be administered by the Department of General Administration (DGA) Division of Engineering and Architectural Services (E&AS). Capital appropriations for cost to an agency/institution for project management/administration are limited to specific tasks as described in OFM's *Capital Plan Instructions*. Agencies/institutions who are clients to E&AS receive no additional, separate capital appropriations for project management. (See below.)
- "**Alternative Public Works**" checkbox identifies this project as qualifying and programmed to use alternative public works contract processes as defined in 39.10 RCW. This checkbox allows entry for cost estimates associated with design-build and general contractor/construction manager types of contracts. (See below.)
- The **Project Cost Summary** data is automatically retrieved from the appropriate sections of the C-100 Form.
- **Formula Override** options are available (as "white boxes") for many cost entries throughout the C-100 Form to allow for better, refined cost estimates. Generally, the override amounts should be less than the calculated amount. Provide explanation of all override entries in the "Notes" section at the end of the C-100 Form.
- **Acquisition Costs** include not only the cost of purchasing or leasing a site and/or facilities, but also all attendant costs necessary to prepare the property for agency use. The costs of site improvements, right-of-way, or conditions on the purchase/lease must be considered under the cost of acquisition if such items are required in order to prepare the property for its

intended purpose. Although many of these costs may be deferred to a construction cost, they should be considered during the site evaluation process.

- **Consultant Services** are costs associated with architect and engineering (A/E) services from private consulting firms. **Basic Design Services** fees are automatically calculated by the C-100 based on the selection for "Building Type." The calculated fees are the maximum amount; lower amounts can be entered in the form. Several subheadings are included in the Consultant Services Section as a suggested listing of extra services that may be required to design the project. Agencies may add specific A/E services in order to fully capture all services needed for a successful project. Extra service costs include: costs to comply with completing the Predesign Manual requirements and the Environmental Impact Statement (EIS), which is a study of the present and future impact of the project on the environment, residents, and the economy. Agencies should review State Environmental Policy Act (SEPA) Rules WAC 197-11 for more information. Refer to OFM's *Guidelines for Determining Architect/Engineer Fees for Public Works Building Projects* for details.
- **Construction Contracts** cost estimates are displayed using the *UNIFORMAT II — Standard Classification for Building Elements and Related Sitework System* (ASTM Standard E 1557). Using UNIFORMAT II ensures consistency in the economic evaluation of building projects over time and from project to project. "**Sitework"** costs are associated with site preparation and utility improvements external to the building footprint. "**Related Project Costs**" include on and off-site mitigation improvements imposed by local building/development jurisdictions. The elements listed on the C-100 under "**Facility Construction**" are the UNIFORMAT II components common to most buildings. Project specific elements can be entered as well.
- The **Maximum Allowable Construction Cost** (MACC) is the summation of the cost estimates for the sitework, related project costs and facility construction.
- **Equipment** includes the costs of equipment and furnishings integral to the project. Equipment is not considered consumable and is obtained through contracts or the Office of State Purchasing within the Department of General Administration. Furnishings include items such as furniture, office equipment and other purchased items. Special construction items include the purchase and installation of office furniture, shelves, movable partitions, and any special program items that are not considered consumables and have a life expectancy of one year or more. OFM's *Capital Plan Instructions* provide additional guidance for equipment purchases from capital appropriations.

- **Other Costs** may include lease purchases, temporary utilities, security and/or escort services anticipated integral to the completion of a capital project. Costs of required permits and local jurisdiction fees (including building permit fees, plan check fees, impact and other permit fees) as appropriately imposed should be itemized in this section. (Do not include costs for permits, fees or bonds associated with the provisions of the general conditions of the public works construction contract since those costs are included in the estimates for the MACC.)

3. Alternative Public Works Contracts

Cost estimates associated with either the design-build or general contractor/construction manager (GC/CM) alternative public works contract methods should be specifically identified and itemized in the appropriate sections on Form C-100.

- **Consultant Services Section—Extra Services, Separate Bid Packages.** The additional cost to the A/E for preparation of separate bid packages not included in the traditional design/bid/build process (GC/CM only).

- **Construction Contracts Section:**

  GC/CM Risk Contingency—maximum amount of five percent of the MACC may be added to the GC/CM MACC (but not the A/E fees).

  Preconstruction Services—maximum amount of five percent of the MACC may be added to the GC/CM MACC (but not the A/E fees) for participation in preconstruction design meetings, life cycle cost design considerations, value engineering, scheduling, design cost estimating, constructability review, project management services, devising alternative construction options for cost savings and planning for sequencing of the work.

  Fee—estimate for the fixed percent fee bid by the GC/CM multiplied by the MACC.

  Bid General Conditions—estimate for temporary work and fees performed by or paid by the GC/CM to accomplish the scope of work.